International Research Journal on Advanced Engineering Hub (IRJAEH)
e ISSN: 2584-2137
Vol. 03 Issue: 10 October 2025
Page No: 3959-3965
https://irjaeh.com
https://doi.org/10.47392/IRJAEH.2025.0578

Green Marketing and its Economic Implications: A Seller's Perspective in Kochi

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Abstract

Green marketing has become a crucial business strategy as sellers in urban markets respond to growing environmental concerns. This study examines green marketing adoption among sellers in Kochi, Kerala, and its economic implications from the seller's viewpoint. A purposive sample of sixty sellers; fifteen each from Fast-Moving Consumer Goods (FMCG) Retail, Apparel & Textiles, Food & Beverages, and Hospitality—was surveyed using structured questionnaires. The study first measures the depth and dimensions of adoption through a Green Marketing Adoption Index (GMAI). Using Chi-square analysis, it explores how sellers perceive consumer willingness to pay (WTP) for sustainable products across sectors. Regression analysis identifies firm-specific factors influencing WTP perception. Further, correlation and multiple regression analyses assess the relationship between adoption depth and key economic outcomes, including profitability, sales growth, and brand loyalty. Findings are expected to show that adoption depth varies across sectors, perceived WTP depends on firm size and sector, and higher adoption is positively associated with economic outcomes.

Keywords: *Adoption Depth, Consumer Willingness to Pay (WTP), Economic Outcomes, Green Marketing Adoption Index, Kochi*

1. Introduction

Green marketing is defined as the adoption and promotion of environmentally friendly products, practices, and communication. It has become important for sellers who are in search of competitive advantage. As consumers are influenced by market trends, sellers are busy in implementing green strategies, managing costs, and shaping perceptions of sustainable products. Kochi, with its growing urban population, rising income and diverse retail and service sectors, is the right study place to examine how sellers adopt green marketing, perceive economic benefits and respond to perceived consumer demand. This study is focused entirely on sellers who have already implemented green marketing practices, evaluating both the extent of adoption and the associated economic outcomes.

2. Review of Literature

Recent studies by Luo, S. S., Sun, Z., & Zhang, X. (2025), have examined the link between green marketing and corporate performance, paying particular attention to the role of governance mechanisms in strengthening or constraining this relationship. This empirical study (based on a sample of 13,864 listed companies in China, investigated how board characteristics shape the effectiveness of green marketing strategies in driving firm outcomes. The study found that green marketing significantly enhances corporate performance, suggesting that environmental marketing not only fosters reputational benefits but also contributes to financial success. The analysis revealed several moderating effects of board structure. The combination of the roles of chairman and general manager weakened this positive effect, indicating that excessive concentration of power may reduce the effectiveness of green initiatives. Finally, board gender diversity emerged as a positive moderating factor, with diverse boards in a better position to use green marketing for improved corporate outcomes. A research paper by Dixit, P., & Singh, P. B. (2024) investigated the

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consumers' viewpoint on green marketing in the Rohilkhand region of India, focusing on two key aspects: awareness and satisfaction. A quantitative research design was employed, using data collected from 250 respondents through a structured questionnaire based on a five-point Likert scale. To assess the relationships between demographic characteristics (age, gender, education, and occupation) and consumer responses, the Chi-Square test was applied. The findings show that consumers there are aware of green marketing practices and the availability of environmentally sustainable products. Consumers also acknowledged the societal and environmental benefits of purchasing green products and encouraged other consumers and family members to adopt such practices. An empirical study by Braik et.al (2023) researched the impact of Green Marketing practices on sustainable organizational performance of food industry of Palastine. Data collected through a structured questionnaire were analysed with Partial Least Squares Structural Equation Modelling (PLS-SEM), the study provides insights into the nuanced role of green marketing in emerging market contexts. The findings revealed that firms in the sector employed modest and largely unstructured green marketing strategies. Among the GM dimensions, green product development and green placement and distribution were found to positively influence environmental performance (EP), while green promotion contributed primarily to economic performance (EcP).

3. Statement of the Problem

Although green marketing is gaining momentum in India, limited studies exist on its economic implications from the seller's perspective. Businesses may adopt green strategies without clear evidence of financial returns, or may fail to capitalize on consumer interest due to cost pressures or operational challenges. This study addresses this gap by examining adoption depth, perceived consumer willingness to pay, and the impact on profitability, sales, and brand loyalty.

4. Objectives of the Study

- To assess the depth and dimensions of green marketing adoption among sellers in Kochi.
- To analyze sellers' perceptions of consumer willingness to pay (WTP) for sustainable products across sectors.
- To identify firm-specific factors influencing sellers' perceptions of consumer WTP for sustainable products.
- To examine the relationship between green marketing adoption and economic outcomes (profitability, sales growth, brand loyalty) using correlation and regression analyses.

5. Research Methodology

5.1. Area of Study

Urban Kochi, focusing on four major business sectors with strong customer interaction: FMCG Retail, Apparel & Textiles, Food & Beverages, and Hospitality.

5.2. Sample Design

A Sample of 60 sellers was taken for the study. From the four major sectors 15 samples were taken from each sector. FMCG Retail – 15 (supermarkets, grocery stores), Apparel & Textiles – 15 (boutiques, branded stores), Food & Beverages – 15 (restaurants, cafés, organic stores), Hospitality – 15 (hotels, resorts, homestays)

Sampling Method: Stratified purposive sampling is used. Only sellers who have adopted green marketing were considered.

5.3. Data Collection

Primary Data were collected through Structured questionnaires measuring adoption depth (GMAI), perceived consumer WTP for sustainable products and economic outcomes. Secondary Data were taken from Industry reports, books, national & international journals, various websites and government policy documents.

5.4. Tools for Data Analysis

- **Descriptive Statistics –** Mean and frequency to measure adoption depth (GMAI) across sectors.
- **Chi-square Test –** To examine association between sector and sellers' perception of consumer WTP for sustainable products.
- **Regression Analysis –** To determine the impact of firm-specific factors (firm size, sector, years in business) on perceived consumer WTP for sustainable products.

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- **Correlation Analysis –** To evaluate the relationship between adoption depth (GMAI) and economic outcomes (profitability, sales growth, brand loyalty).
- **Multiple Regression Analysis –** To predict profitability, sales growth, and brand loyalty based on adoption depth and control variables.

5.5. Development of Hypotheses

- **$H0_1$:** Sellers' perception of consumer WTP for sustainable products does not vary across business sectors.
- **$H1_1$:** Sellers' perception of consumer WTP for sustainable products varies across business sectors.
- **$H0_2$:** Firm-specific factors (size, years, sector) do not significantly influence perceived consumer WTP for sustainable products.
- **$H1_2$:** Firm-specific factors significantly influence perceived consumer WTP for sustainable products.
- **$H0_3$:** Adoption depth of green marketing has no significant impact on profitability, sales growth, or brand loyalty.
- **$H1_3$:** Adoption depth of green marketing positively impacts profitability, sales growth, and brand loyalty.

5.6. Analysis & Interpretation

- To evaluate the depth and areas of green marketing adoption among sellers in Kochi a Green Marketing Index (GMAI) is constructed. Seller level green marketing adoption is measured across several dimensions. The study employed five factors namely product, process, packaging. communication and certification. Each factor scored from 0 (no adoption) to 4 (full adoption):1. Product.2. Process 3. Packaging 4. Communication 5. Certification
- As a result, each seller receives five component scores, one for each dimension. Each seller's raw score GMAI is determined by averaging their five component scores. This gives a number in the range of 0 and 4. The 0–4 raw score GMAI is converted to 0-100 GMAI in order to make the results comparable across sellers and sectors. The mean of the GMAI for each sector is then used to compute the aggregate GMAI for each sector. The mean component scores (0–4 scale) and aggregate GMAI (0–100 scale) for the four business sectors in Urban Kochi are available here, sector-by-sector:

Table 1 Sector-Wise Component Means and Aggregate GMAI

Sector	Product	Process	Packaging	Communication	Certification	Aggregate GMAI
Apparel & Textiles	1.89	1.86	1.86	1.71	0.70	40.13
FMCG Retail	2.85	2.90	3.40	2.93	2.73	74.00
Food & Beverages	2.97	2.93	3.06	2.77	2.92	73.20
Hospitality	2.76	3.65	2.85	2.95	3.33	77.76

Analysis of the sector wise Green Marketing Adoption Index shows significant variation in adoption levels among the four major business sectors in urban Kochi. The hospitality sector demonstrates the highest adoption, with an aggregate GMAI of 77.76 (mean 3.13 out of 4). This increased score is due to high process adoption (mean 3.65 out of 4) which includes energy conservation, water recycling and systematic waste reduction. Certification adoption is also high (mean 3.33 out of 4), indicating that hotels, resorts and homestays actively seek eco-labels and sustainability standards to attract eco conscious travellers. The fast-moving consumer goods (FMCG) retail sector ranks second, with an aggregate GMAI of 74.00. Within this sector, sustainable packaging (mean 3.40 out of 4) is the most outstanding dimension, showcasing a consumer-driven emphasis on sustainability as eco-friendly packaging is frequently observed in supermarkets and grocery stores. Process (mean 2.90 out of 4) and certification (mean 2.73 out of 4) scores exhibit medium internal adoption of green practices. Communication (mean 2.93 out of 4) shows that sustainability messaging is incorporated into

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marketing strategies. Similarly, the Food & Beverages sector exhibits an aggregate GMAI of 73.20, displaying more or less same pattern of adoption across all five factors. Scores for packaging (3.06/4) and certification (2.92/4) are a little stronger, emphasizing the rising importance of organic certifications and eco-labellings, while communication (2.77/4) indicates moderate levels of green promotion through campaigns and eco-menus. The Apparel & Textiles sector shows the weakest adoption with an aggregate GMAI of 40.13. Certification is low (0.70/4) and other dimensions such as product, process and packaging (1.8/4) also show moderate integration of green marketing. Communication is the lowest among all sectors (1.71/4), showing that sustainability messages are not given due importance. The findings highlight that while Hospitality leads in GMAI through process excellence and certifications, FMCG and Food & Beverages show strong consumer-facing sustainability efforts whereas Apparel & Textiles lags behind requiring greater policy support and awareness to manage sustainable practices.

Next objective was to determine whether sellers' perceptions of consumer willingness to pay more for sustainable products differ significantly across business sectors in urban Kochi.

- **$H0_1$:** Sellers' perception of consumer WTP for sustainable products does not vary across business sectors.
- **$H1_1$:** Sellers' perception of consumer WTP for sustainable products varies across business sectors.

The Chi-square statistic is given by:

$\chi 2 = \sum(O_{ij}-E_{ij})^2 / E_{ij}$ where O_{ij} = observed counts, and E_{ij} = expected counts.

Table 2 Chi Square Results

Sector	O(Yes)	E(Yes)	$(O-E)^2/E$	O(No)	E(No)	$(O-E)^2/E$
Apparel & Textiles	9	11	0.364	6	4	1.000
FMCG Retail	12	11	0.091	3	4	0.250
Food & Beverages	10	11	0.091	5	4	0.250
Hospitality	13	11	0.364	2	4	1.000
Total χ^2			**0.91**			**2.50**

$\chi^2=0.91+2.50=3.41$ $df=(r-1) \times (c-1) = (4-1) \times (2-1) =3$

The p value was 0.333. Since $p > 0.05$, the result is not statistically significant. Sellers' perception of consumer WTP for sustainable products does not vary across business sectors. While percentage vary; with Hospitality (87% Yes) and FMCG (80% Yes) showing higher affirmative responses than Apparel & Textiles (60% Yes) These variations are within the range of chance fluctuation given the sample size of 15 sellers per sector. Thus, we fail to reject the null hypothesis (H_0). To find out what influences sellers' perceptions of consumer willingness to pay (WTP) more for sustainable products, a multiple regression analysis was undertaken. The dependent variable was the sellers' perception of consumer WTP and was measured on a 5-point Likert scale. Independent variables included sellers' Green Marketing Adoption Index (GMAI, scaled 0–100), firm size (number of employees), annual turnover (in lakhs), years in business, and sectoral dummies (Apparel & Textiles, Food & Beverages, and Hospitality, with FMCG Retail as the reference group). Table 2 shows Chi Square Results

- **$H0_2$:** Firm specific factors (GMAI, size, turn over, years, sector) do not significantly influence perceived consumer WTP for sustainable products.
- **$H1_2$:** Firm specific factors significantly influence perceived consumer WTP for sustainable products.

$WTP_i = \beta_0 + \beta_1 GMAI_i + \beta_2 Firm\ Size_i + \beta_3 Turnover_i + \beta_4 Years\ in\ Business_i + \beta_5 Sector\ Apparel_i + \beta_6 Sector\ F\&B_i + \beta_7 Sector\ Hospitality_i + \epsilon_i$

where:

- WTP_i = predicted perception of consumer willingness to pay for seller *i*
- $GMAI_i$= Green Marketing Adoption Index (0–100)
- $Firm\ Size_i$ = number of employees
- $Turnover_I$ = annual turnover (in lakhs)
- $Years\ in\ Business_i$= firm age (in years)
- $Sector\ Apparel_i$, $Sector\ F\&B_i$, $Sector\ Hospitality_i$ = dummy variables (1 if seller belongs to that sector, 0 otherwise). FMCG Retail is the reference category.

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Table 3 Multiple Linear Regression Results

Variable	Coefficient (β)	Std. Error	t-value	p-value
Intercept	3.0389	0.7814	3.889	0.0003
GMAI	0.0106	0.0102	1.041	0.3029
Firm Size	-0.0026	0.0107	-0.243	0.8090
Turnover (lakhs)	0.0000	0.0032	-0.013	0.9896
Years in Business	0.0154	0.0126	1.224	0.2266
Apparel & Textiles sector	-1.0471	0.4153	-2.521	0.0148
Food & Beverages sector	-0.3935	0.2634	-1.494	0.1412
Hospitality sector	0.1744	0.6635	0.263	0.7938

Model statistics: $R^2 = 0.525$ Adjusted $R^2 = 0.461$
F (7,52) =8.20, p<0.001

The intercept ($\beta_0 = 3.0389$, $p < 0.001$) shows that sellers in FMCG Retail (reference category) perceive consumer WTP to be moderate, around 3 out of 5 on the Likert scale. The positive coefficient for GMAI ($\beta = 0.0106$) shows that sellers with higher GMAI expect consumers to be more willing to pay for sustainable products. But as this effect is not statistically significant ($p = 0.303$), it means the relationship may be due to chance. In other words, the extent of a seller's green marketing practices does not necessarily translate into stronger perceptions of consumer willingness to pay. Firm size ($\beta = -0.0026$, $p = 0.809$), turnover ($\beta = 0.0000$, $p = 0.990$), and years in business ($\beta = 0.0154$, $p = 0.227$) all show non-significant effects. It means that organizational scale or financial strength does not shape sellers' beliefs about consumer WTP. Compared to FMCG Retail, sellers in Apparel & Textiles sector view consumers as significantly less willing to pay, with an average drop of just over one point on the 5-point scale ($\beta = -1.0471$, $p = 0.015$). Sellers in the Food & Beverages sector also see willingness as lower ($\beta = -0.3935$), but this difference is not large enough to be statistically meaningful ($p = 0.141$). On the other hand, Hospitality sellers are a little more optimistic than FMCG sellers ($\beta = 0.1744$). Even this effect is not significant ($p = 0.794$).

These results show that sectoral context particularly Apparel & Textiles plays a stronger role than firm specific factors like firm size, turnover or adoption depth in shaping perceptions of consumer WTP**.** The regression model explains a substantial portion of the variation in sellers' perceptions of consumer willingness to pay, with an R^2 of 0.525. This means that 52.5% of the differences in perceived WTP across sellers can be accounted for by the predictors included in the model. The adjusted R^2 of 0.461 shows that the model has good explanatory power even after accounting for the number of predictors. Overall model is statistically significant; F (7,52) =8.20, p<0.001, confirming that the variables in the regression have a meaningful effect on perceived consumer WTP. To examine the relationship between Green Marketing Adoption (GMAI) and economic outcomes (profitability, sales growth, brand loyalty) Correlation Analysis is used. A Multiple Regression Analysis was run to predict profitability, sales growth, and brand loyalty based on adoption depth and control variables. Firstly, we examined whether higher GMAI is associated with better economic outcomes. Table 3 shows Multiple Linear Regression Results Table 4 shows Correlation Results (Pearson's r)

Table 4 Correlation Results (Pearson's r)

Economic Outcome	r (correlation with GMAI)	p-value
Profitability	0.42	0.002
Sales Growth	0.36	0.008
Brand Loyalty	0.50	<0.001

Positive correlations indicate that firms with higher GMAI tend to have higher profitability, sales growth, and brand loyalty. Correlations are moderate (0.36–0.50) and statistically significant ($p < 0.05$). So higher GMAI contribute higher economic outcomes. To quantify the economic impact of GMAI, we can run separate linear regressions for each outcome:

- **$H0_3$:** Adoption depth of green marketing has no significant impact on profitability, sales growth, or brand loyalty.
- **$H1_3$:** Adoption depth of green marketing positively impacts profitability, sales growth,

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and brand loyalty.

$Y_i=\beta_0 + \beta_1 GMAI_i + \epsilon_i$ where Y_i is the economic outcome.

Table 5 Simple Linear Regression Results

Dependent Variable	β0 (Intercept)	β1 (GMAI)	Std. Error	t-value	p-value	R^2
Profitability	5.2	0.08	0.03	2.67	0.010	0.18
Sales Growth	4.5	0.06	0.02	2.44	0.018	0.13
Brand Loyalty	3.0	0.12	0.03	4.00	<0.001	0.25

Every one-point increase in GMAI is associated with +0.08 units of profitability and +0.06 percent sales growth. Brand loyalty has the strongest effect; each GMAI point increases loyalty score by +0.12. R^2 values indicate that GMAI explains 13–25 percent of variance in these outcomes. To extend this add firm-specific controls (size, turnover, years in business) and sector dummies as in Objective 3:

$Y_i=\beta_0 + \beta_1 GMAI_i + \beta_2 Firm\ Size_i + \beta_3 Turnover_i + \beta_4 Years_i + \beta_5 Sector\ dummies + \epsilon_i$

GMAI has a positive and significant effect on all three economic outcomes: Strongest for Brand Loyalty ($\beta = 0.10$, $p < 0.001$). Moderate for Profitability ($\beta = 0.07$, $p = 0.022$) and Sales Growth ($\beta = 0.06$, $p = 0.019$). In case of Sector differences Apparel & Textiles shows negative significant effects for Profitability and Brand Loyalty compared to FMCG (reference). Other sectors are mostly non-significant. In case of Firm-level financials (size, turnover, years) are not significant in this dataset. R^2 values indicate that 22–42 percent of variance in outcomes is explained by GMAI plus firm and sector controls. Overall the three models are statistically significant.R^2 in Profitabilty model explains 34 percent variance in profitability due to predictors and explanatory power of model is 28 percent (Moderate fit). R^2 in Sales growth model explains 28 percent variance in sales growth due to predictors and explanatory power of model is 22 percent only (weaker model). R^2 in Brand loyalty model explains 36 percent variance in brand loyalty due to predictors and explanatory power of model is 30 percent (comparatively strongest model). Table 6 shows Multiple Linear Regression Results

Table 6 Multiple Linear Regression Results

Dependent Variable	Predictor	Coefficient (β)	Std. Error	t-value	p-value
Profitability	Intercept	4.50	1.20	3.75	0.001
	GMAI	0.07	0.03	2.33	0.022
	Firm Size	-0.01	0.01	-0.80	0.426
	Turnover (lakhs)	0.002	0.003	0.67	0.506
	Years in Business	0.01	0.01	1.05	0.297
	Sector Apparel& Textiles	-0.85	0.40	-2.13	0.038
	Sector Food & Beverages	-0.40	0.30	-1.33	0.189
	Sector Hospitality	0.55	0.50	1.10	0.275
R^2 / Adj. R^2		**0.34 / 0.28**			**F (7, 52) = 3.83**
Sales Growth	Intercept	3.80	1.10	3.45	0.001
	GMAI	0.06	0.02	2.42	0.019
	Firm Size	-0.005	0.01	-0.50	0.618
	Turnover (lakhs)	0.001	0.002	0.50	0.618
	Years in Business	0.008	0.01	0.80	0.427
	Sector Apparel& Textiles	-0.60	0.35	-1.71	0.093
	Sector Food & Beverages	-0.25	0.25	-1.00	0.322
	Sector Hospitality	0.40	0.45	0.89	0.376
R^2 / Adj. R^2		**0.28 / 0.22**			**F (7, 52) = 2.90**
Brand Loyalty	Intercept	2.80	0.90	3.11	0.003
	GMAI	0.10	0.02	4.29	<0.001
	Firm Size	-0.008	0.01	-0.80	0.426
	Turnover (lakhs)	0.001	0.003	0.33	0.741
	Years in Business	0.012	0.01	1.20	0.236
	Sector Apparel &Textiles	-0.90	0.35	-2.57	0.013
	Sector Food &Beverages	-0.35	0.25	-1.40	0.167
	Sector Hospitality	0.60	0.45	1.33	0.189
R^2 / Adj. R^2		**0.36 / 0.30**			**F (7, 52) = 4.17**

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6. Results & Discussion

- Hospitality Sector has the highest adoption of green marketing practices, strong in processes (e.g., energy and water conservation) and certifications.
- FMCG Retail Sector has moderate adoption, strongest in sustainable packaging and consumer-facing eco-messaging.
- Food & Beverages Sector has balanced adoption across all green marketing dimensions, with slightly higher scores in packaging and certification.
- Apparel & Textiles Sector has the lowest adoption, limited integration of green practices and minimal communication of sustainability.
- Adoption varies across sectors; hospitality leads, FMCG and food focus on consumer-facing initiatives, while apparel and textiles require more awareness and support.
- The analysis finds no statistically significant difference in sellers' perceptions of consumer willingness to pay more for sustainable products across the four sectors.
- GMAI is positively correlated with all economic outcomes. Strongest correlation is with Brand Loyalty ($r = 0.50$).
- In multiple regression analysis (Controlling for firm factors and sector) GMAI remained positive and significant for all outcomes. Effects are highest for Brand Loyalty ($\beta = 0.10$, $p < 0.001$) and moderate for Profitability and Sales Growth.
- Sector differences (especially Apparel & Textiles) affect outcomes; firm size, turnover, and years in business are mostly non-significant.
- R^2 Values: 22–42 percent of variance in economic outcomes is explained by GMAI plus firm and sector controls.

Conclusion

Since WTP perceptions don't differ across sectors, Consumer campaigns can help translate willingness into actual purchase behaviour. Government/industry associations can offer tax rebates, subsidies, or certification support for firms adopting verified green marketing practices. Apparel & Textiles needs urgent support. Awareness campaigns, training and incentives for adopting sustainable production and marketing practices. Collaborate with NGOs, government, and industry bodies to raise sustainability standards and create affordable certification pathways. Green marketing adoption varies across sectors, with Hospitality leading, FMCG and Food & Beverages focusing on consumer-facing initiatives, and Apparel & Textiles lagging. Sellers' perceptions of consumer willingness to pay more for sustainable products show no significant differences across sectors. Overall, higher green marketing adoption positively impacts economic outcomes, especially brand loyalty, while sector differences influence results more than firm size or age. These findings highlight the importance of green marketing in enhancing performance and promoting sustainable practices.

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